Network Working Group
Request for Comments: 857

J. Postel
J. Reynolds
ISI

Obsoletes: NIC 15390

May 1983

TELNET ECHO OPTION

This RFC specifies a standard for the ARPA Internet community. Hosts on the ARPA Internet are expected to adopt and implement this standard.

1. Command Name and Code

ECHO 1

2. Command Meanings

IAC WILL ECHO

The sender of this command REQUESTS to begin, or confirms that it will now begin, echoing data characters it receives over the TELNET connection back to the sender of the data characters.

IAC WON'T ECHO

The sender of this command DEMANDS to stop, or refuses to start, echoing the data characters it receives over the TELNET connection back to the sender of the data characters.

IAC DO ECHO

The sender of this command REQUESTS that the receiver of this command begin echoing, or confirms that the receiver of this command is expected to echo, data characters it receives over the TELNET connection back to the sender.

IAC DON'T ECHO

The sender of this command DEMANDS the receiver of this command stop, or not start, echoing data characters it receives over the TELNET connection.

3. Default

WON'T ECHO

DON'T ECHO

No echoing is done over the TELNET connection.

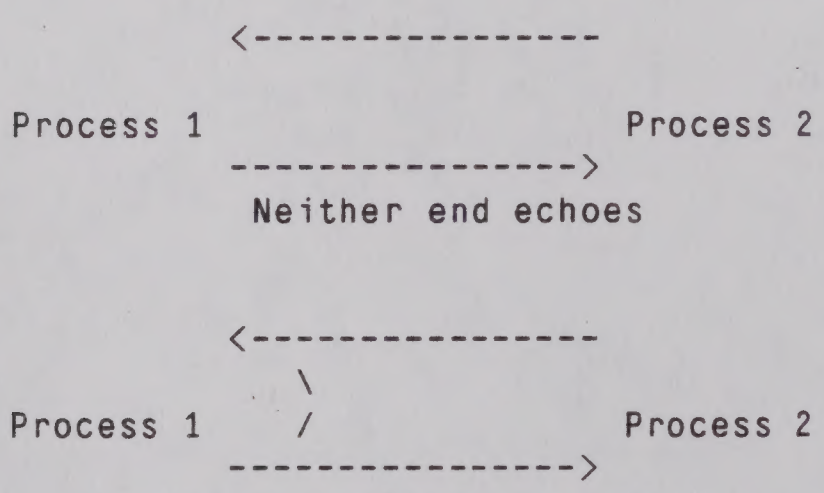
4. Motivation for the Option

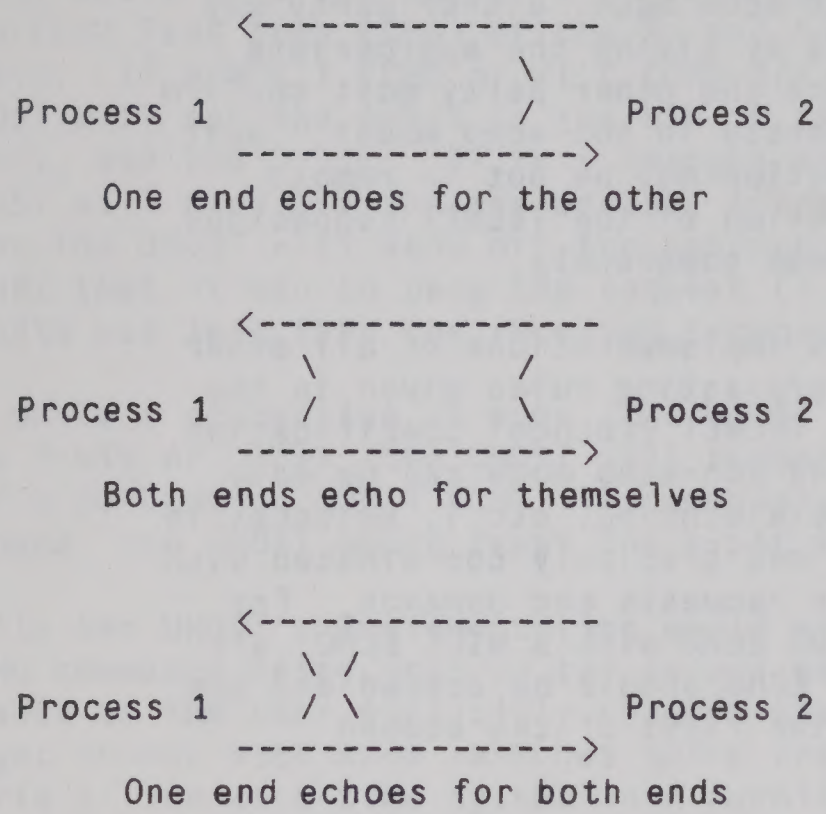
The NVT has a printer and a keyboard which are nominally interconnected so that "echoes" need never traverse the network; that is to say, the NVT nominally operates in a mode where characters typed on the keyboard are (by some means) locally turned around and printed on the printer. In highly interactive situations it is appropriate for the remote process (command language interpreter, etc.) to which the characters are being sent to control the way they are echoed on the printer. In order to support such interactive situations, it is necessary that there be a TELNET option to allow the parties at the two ends of the TELNET connection to agree that characters typed on an NVT keyboard are to be echoed by the party at the other end of the TELNET connection.

5. Description of the Option

When the echoing option is in effect, the party at the end performing the echoing is expected to transmit (echo) data characters it receives back to the sender of the data characters. The option does not require that the characters echoed be exactly the characters received (for example, a number of systems echo the ASCII ESC character with something other than the ESC character). When the echoing option is not in effect, the receiver of data characters should not echo them back to the sender; this, of course, does not prevent the receiver from responding to data characters received.

The normal TELNET connection is two way. That is, data flows in each direction on the connection independently; and neither, either, or both directions may be operating simultaneously in echo mode. There are five reasonable modes of operation for echoing on a connection pair:





This option provides the capability to decide on whether or not either end will echo for the other. It does not, however, provide any control over whether or not an end echoes for itself; this decision must be left to the sole discretion of the systems at each end (although they may use information regarding the state of "remote" echoing negotiations in making this decision).

It should be noted that if BOTH hosts enter the mode of echoing characters transmitted by the other host, then any character transmitted in either direction will be "echoed" back and forth indefinitely. Therefore, care should be taken in each implementation that if one site is echoing, echoing is not permitted to be turned on at the other.

As discussed in the TELNET Protocol Specification, both parties to a full-duplex TELNET connection initially assume each direction of the connection is being operated in the default mode which is non-echo (non-echo is not using this option, and the same as DON'T ECHO, WON'T ECHO).

If either party desires himself to echo characters to the other party or for the other party to echo characters to him, that party gives the appropriate command (WILL ECHO or DO ECHO) and waits (and hopes) for acceptance of the option. If the request to operate the connection in echo mode is refused, then the connection continues to operate in non-echo mode. If the request to operate the connection in echo mode is accepted, the connection is operated in echo mode.

After a connection has been changed to echo mode, either party may demand that it revert to non-echo mode by giving the appropriate DON'T ECHO or WON'T ECHO command (which the other party must confirm thereby allowing the connection to operate in non-echo mode). Just as each direction of the TELNET connection may be put in remote echoing mode independently, each direction of the TELNET connection must be removed from remote echoing mode separately.

Implementations of the echo option, as implementations of all other TELNET options, must follow the loop preventing rules given in the General Considerations section of the TELNET Protocol Specification. Also, so that switches between echo and non-echo mode can be made with minimal confusion (momentary double echoing, etc.), switches in mode of operation should be made at times precisely coordinated with the reception and transmission of echo requests and demands. For instance, if one party responds to a DO ECHO with a WILL ECHO, all data characters received after the DO ECHO should be echoed and the WILL ECHO should immediately precede the first of the echoed characters.

The echoing option alone will normally not be sufficient to effect what is commonly understood to be remote computer echoing of characters typed on a terminal keyboard--the SUPPRESS-GO AHEAD option will normally have to be invoked in conjunction with the ECHO option to effect character-at-a-time remote echoing.

6. A Sample Implementation of the Option

The following is a description of a possible implementation for a simple user system called "UHOST".

A possible implementation could be that for each user terminal, the UHOST would keep three state bits: whether the terminal echoes for itself (UHOST ECHO always) or not (ECHO mode possible), whether the (human) user prefers to operate in ECHO mode or in non-ECHO mode, and whether the connection from this terminal to the server is in ECHO or non-ECHO mode. We will call these three bits P(hysical), D(esired), and A(ctual).

When a terminal dials up the UHOST the P-bit is set appropriately, the D-bit is set equal to it, and the A-bit is set to non-ECHO. The P-bit and D-bit may be manually reset by direct commands if the user so desires. For example, a user in Hawaii on a "full-duplex" terminal, would choose not to operate in ECHO mode, regardless of the preference of a mainland server. He should direct the UHOST to change his D-bit from ECHO to non-ECHO.

When a connection is opened from the UHOST terminal to a server, the

UHOST would send the server a DO ECHO command if the MIN (with non-ECHO less than ECHO) of the P- and D-bits is different from the A-bit. If a WON'T ECHO or WILL ECHO arrives from the server, the UHOST will set the A-bit to the MIN of the received request, the P-bit, and the D-bit. If this changes the state of the A-bit, the UHOST will send off the appropriate acknowledgment; if it does not, then the UHOST will send off the appropriate refusal if not changing meant that it had to deny the request (i.e., the MIN of the P-and D-bits was less than the received A-request).

If while a connection is open, the UHOST terminal user changes either the P-bit or D-bit, the UHOST will repeat the above tests and send off a DO ECHO or DON'T ECHO, if necessary. When the connection is closed, the UHOST would reset the A-bit to indicate UHOST echoing.

While the UHOST's implementation would not involve DO ECHO or DON'T ECHO commands being sent to the server except when the connection is opened or the user explicitly changes his echoing mode, bigger hosts might invoke such mode switches quite frequently. For instance, while a line-at-a-time system were running, the server might attempt to put the user in local echo mode by sending the WON'T ECHO command to the user; but while a character-at-a-time system were running, the server might attempt to invoke remote echoing for the user by sending the WILL ECHO command to the user. Furthermore, while the UHOST will never send a WILL ECHO command and will only send a WON'T ECHO to refuse a server sent DO ECHO command, a server host might often send the WILL and WON'T ECHO commands.